



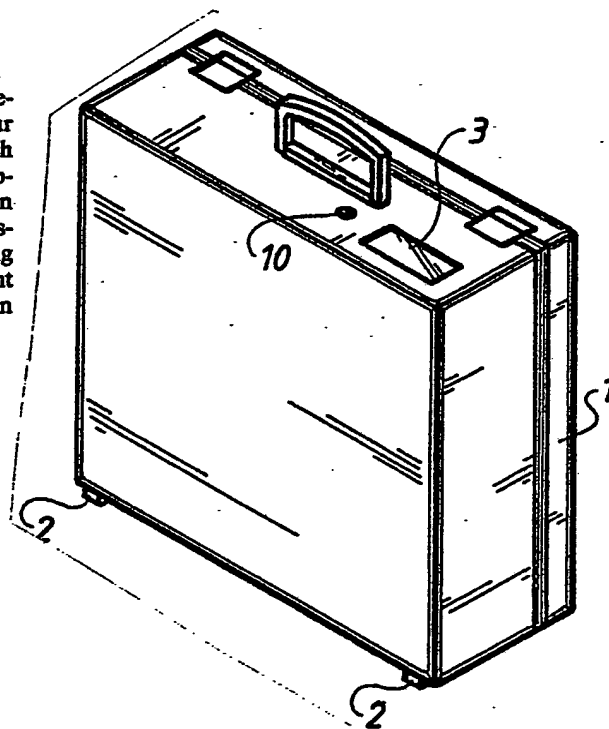
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(21) International Application Number: PCT/FI84/00029</p> <p>(22) International Filing Date: 11 April 1984 (11.04.84)</p> <p>(31) Priority Application Number: 831209</p> <p>(32) Priority Date: 11 April 1983 (11.04.83)</p> <p>(33) Priority Country: FI</p> <p>(71)(72) Applicants and Inventors: KOIVISTO, Vesa [FI/FI]; Raikulintie, SF-54850 Kuukanniemi (FI). KANTOLA, Risto, Olavi [FI/SE]; Skärholmen, Äspholmsvägen 41, S-127 45 Stockholm (SE).</p> <p>(74) Agent: OY KOLSTER AB; Lönnrotinkatu 19 B, P.O. Box 148, SF-00121 Helsinki 12 (FI).</p> <p>(81) Designated States: AT, AU, BE (European patent), CH (European patent), DE, DK, FR (European patent), GB, JP, LU (European patent), NL, NO, SE, US.</p>		<p>Published With international search report.</p>

(54) Title: BAG WITH WEIGHING DEVICE

(57) Abstract

A bag for luggage, documents, instruments and corresponding comprising a stiff body (1) and several, mostly four legs (2) on which the bag is placed to stand. The defect of such a conventional bag is that it is impossible to tell even its approximately accurate weight without a separate weighing. In order to eliminate this problem means for measuring and displaying its gross or net weight is adjusted to the bag according to the invention. Preferably the means for measuring the weight comprises strain-gauge transducers which are adapted between each leg (2) and the body (1) of the bag.



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"Bag with weighing device."

The object of this invention is a bag for luggage, documents, instruments or corresponding comprising a stiff body and several, mostly four legs on which the bag can be placed to stand.

Even if bags similar to as described above well fill the functions conventionally attributed to them, it has nowadays, especially as travelling by air is increasing, been noticed some defects in them.

Without separate weighing it is impossible to give, for a conventional bag, even the approximately accurate weight of its contents or the total weight of the bag, for which travelling by air sometimes has even strict limits.

To solve this problem a spring scale equipment adapted between the handle of the bag and the body of it is known from e.g. the British Patent Specification 957,360 and the French Patent Specification 2,155,544. These spring scales give a reading of the bag weight when the bag is lifted by its handle. Thus the scales are subjected to either a continuous load when the bag is carried or alternatively the weighing functions only when the handle alone is set in a weighing position. Thus the handle has to be constructed in a manner differing from the conventional and the fitting of the spring scale equipment into the handle is also difficult and expensive.

In order to eliminate the aforementioned disadvantages it is characteristic for the bag according to the invention, that to the bag strain-gauge transducers are attached for measuring and displaying its net or gross weight, which strain-gauge transducers are adapted between each leg and the body of the bag.

In the following the bag according to the invention is described more in detail referring to the enclosed



drawing, where

Figure 1 is a perspective view of the bag according to the invention, and

5 Figure 2 shows partly a circuit diagram and partly schematically means for measuring and displaying the bag weight.

Figure 1 shows a bag according to the invention, which bag comprises a stiff body 1 and four legs 2 (only two are seen in the Figure) on which the bag is placed
10 to stand.

Between each leg 2 and the body 1 of the bag strain-gauge transducers (not shown) are adapted so that the bag weight is transmitted through them to the supporting under-
laying. These strain-gauge transducers are of the type the
15 resistance value of which changes as a function of the pressure they are subjected to. To the bag in Figure 1 is attached a numeral display 3 which shows the bag weight. Beside the display a contact button 10 is set by means of which the display 3 can when desired be switched on.

20 Figure 2 shows more in detail the circuit measuring the bag weight. The actual measuring part consists of the measuring bridge, which comprises a series of strain-gauge transducers 6 (which are shown as one unit for the sake of clarity), the regulation resistance 7 and two
25 balancing resistances 8 and a direct-current supply 9 connected over the bridge. By means of the regulation resistance 7 the measuring bridge can be adjusted to show either the net or gross weight of the bag. The direct-current supply 9 can be e.g. a 5 V dry battery. The
30 direct-current signal given by the measuring bridge is summed up and amplified with an operational amplifier 5. After this the signal is transformed into a digital signal with a A/D transformer 4, which also comprises a control unit for the display 3, which is preferably a liquid
35 crystal display. When pressing the contact button, which is not shown in Figure 2, the display 3, which can



preferably be a $3\frac{1}{2}$ -number display, is made to show the bag weight measured by the strain-gauge transducers.

It is to be understood that the idea according to the invention of attaching the measuring means to be a constructional part of the travel and other bags can be varied considerably within the scope of the enclosed claim from what is described in the embodiment example above. The invention can be adjusted to all objects standing on legs or rolls or other corresponding supports.



Claims:

A bag for luggage, documents, instruments or
corresponding comprising a stiff body (1) and several,
5 mostly four legs (2) on which the bag is placed to
stand, c h a r a c t e r i z e d in that to the bag
strain-gauge transducers are attached for measuring
and displaying its net or gross weight, which strain-
gauge transducers are adapted between each leg (2) and
10 the body (1) of the bag.



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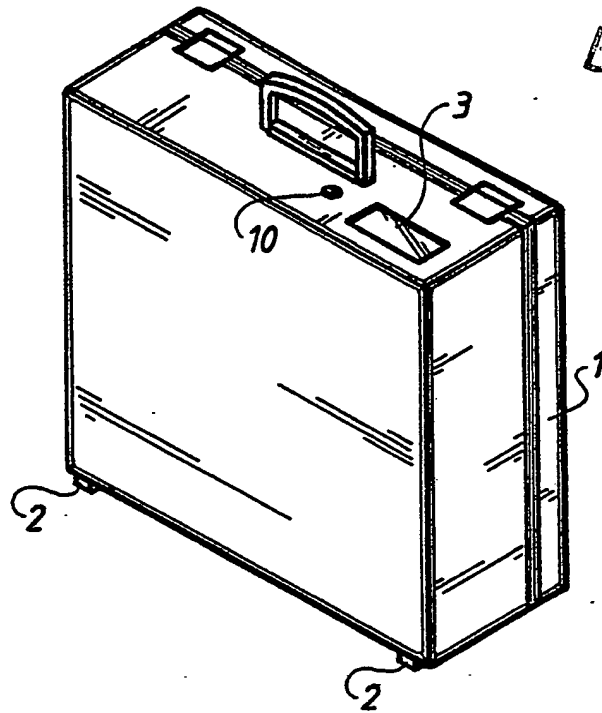


FIG. 1

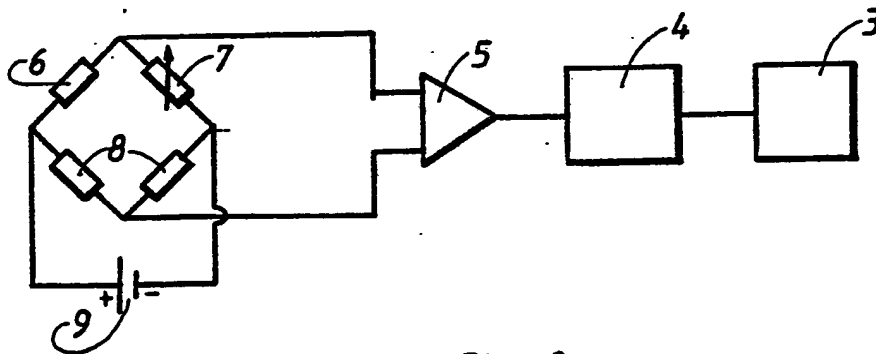


FIG. 2

INTERNATIONAL SEARCH REPORT

International Application No PCT/FI84/00029

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) ³ According to International Patent Classification (IPC) or to both National Classification and IPC ³ <div style="text-align: center; font-family: monospace; font-size: 1.2em;">A 45 C 13/00</div>																	
II. FIELDS SEARCHED <div style="text-align: center; font-size: 0.8em;">Minimum Documentation Searched ⁴</div> <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 20%; border-bottom: 1px solid black; font-size: 0.8em;">Classification System</th> <th style="border-bottom: 1px solid black; font-size: 0.8em;">Classification Symbols</th> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;">IPC 3</td> <td style="padding: 5px;">A 45 C 3/00, 5/00, 13/00, 15/00; G 01 G 19/00, 19/02, 19/56, 19/58</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;">US C1</td> <td style="padding: 5px;">177:145, 231, 264; 190:19, 41, 42</td> </tr> </table> <div style="text-align: center; font-size: 0.8em; margin-top: 5px;">Documentation Searched other than Minimum Documentation to the extent that such Documents are included in the Fields Searched ⁵</div>			Classification System	Classification Symbols	IPC 3	A 45 C 3/00, 5/00, 13/00, 15/00; G 01 G 19/00, 19/02, 19/56, 19/58	US C1	177:145, 231, 264; 190:19, 41, 42									
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III. DOCUMENTS CONSIDERED TO BE RELEVANT ¹⁶ <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%; font-size: 0.8em;">Category ⁶</th> <th style="width: 70%; font-size: 0.8em;">Citation of Document, ¹⁶ with indication, where appropriate, of the relevant passages ¹⁷</th> <th style="width: 20%; font-size: 0.8em;">Relevant to Claim No. ¹⁸</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; vertical-align: top;">A</td> <td>DE, A1, 2 615 516 (PIETZSCH, OVERLACH) 20 October 1977</td> <td style="text-align: center; vertical-align: top;">1</td> </tr> <tr> <td style="text-align: center; vertical-align: top;">A</td> <td>GB, A, 17 557 (MAHS, KOCHMANN) August 1930</td> <td style="text-align: center; vertical-align: top;">1</td> </tr> <tr> <td style="text-align: center; vertical-align: top;">A</td> <td>FR, A1, 2 155 544 (KARMALKER) 18 May 1973</td> <td style="text-align: center; vertical-align: top;">1</td> </tr> <tr> <td style="text-align: center; vertical-align: top;">A</td> <td>US, A, 2 759 577 (WHITE) 21 August 1956</td> <td style="text-align: center; vertical-align: top;">1</td> </tr> </tbody> </table>			Category ⁶	Citation of Document, ¹⁶ with indication, where appropriate, of the relevant passages ¹⁷	Relevant to Claim No. ¹⁸	A	DE, A1, 2 615 516 (PIETZSCH, OVERLACH) 20 October 1977	1	A	GB, A, 17 557 (MAHS, KOCHMANN) August 1930	1	A	FR, A1, 2 155 544 (KARMALKER) 18 May 1973	1	A	US, A, 2 759 577 (WHITE) 21 August 1956	1
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<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>¹⁵ Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"G" document member of the same patent family</p> </div> </div>																	
IV. CERTIFICATION <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-bottom: 1px solid black; padding: 5px;"> Date of the Actual Completion of the International Search ¹⁹ <div style="font-family: monospace; font-size: 1.2em;">1984-07-11</div> </td> <td style="width: 50%; border-bottom: 1px solid black; padding: 5px;"> Date of Mailing of this International Search Report ² <div style="font-family: monospace; font-size: 1.2em;">1984-07-13</div> </td> </tr> <tr> <td style="border-bottom: 1px solid black; padding: 5px;"> International Searching Authority ¹ <div style="font-family: monospace; font-size: 1.2em;">Swedish Patent office</div> </td> <td style="border-bottom: 1px solid black; padding: 5px;"> Signature of Authorized Officer ²⁰ <div style="font-family: monospace; font-size: 1.2em;">Peter Kylin</div> </td> </tr> </table>			Date of the Actual Completion of the International Search ¹⁹ <div style="font-family: monospace; font-size: 1.2em;">1984-07-11</div>	Date of Mailing of this International Search Report ² <div style="font-family: monospace; font-size: 1.2em;">1984-07-13</div>	International Searching Authority ¹ <div style="font-family: monospace; font-size: 1.2em;">Swedish Patent office</div>	Signature of Authorized Officer ²⁰ <div style="font-family: monospace; font-size: 1.2em;">Peter Kylin</div>											
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